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AL-700521-69- 001
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FY-70

QUARTERLY REPORT

No. 2

30 November 1969

(1 September 1969 - 30 November 1969)

Prepared by:

[redacted]

25X1

Approved by:

5X1

[redacted]

Date: 11 December 1969

Declass Review by NGA.

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GROUP 1
EXCLUDED FROM AUTOMATIC DOWNGRADING
AND DECLASSIFICATION

30 Nov 69

PROGRAM OBJECTIVE

To investigate through studies, tests, and the fabrication and use of engineering breadboard equipment, new methods or devices which will further the state of the art in photographic techniques and practices as it pertains to improved extraction of collected intelligence information from photographic materials.

INTRODUCTION

1. This Quarterly Report No. 2, FY-70 covers progress for the months of September, October, and November 1969. It contains detailed reports on the following active, approved PARs:

a. PAR 249A, Photographic Enlarger Maintenance

b. PAR 251, Image Enhancement Studies Using Ring Smear Techniques

c. PAR 252, Improvement of the Precision Enlarger Fluid Injection System

d. PAR 253, Stereogram Printer Optical Development

e. PAR 254, Technical/Consultative Contractor Services to Improve Production Methods at Customer's Facility

5X1 2. A numerical list of all [ ] PARs is provided in the Appendix for reference purposes. It indicates the title (abbreviated in some cases) and the current status of each.

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[redacted]

25X1

FY-70 Quarterly Report No. 2

PAR 249A
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SUBJECT: Photographic Enlarger Maintenance

TASK/PROBLEM

1. Provide photographic enlarger maintenance at the customer's facility for two [redacted] Precision Enlargers (BPE) and four 10-20-40X Enlargers.

5X1

INTRODUCTION

2. During this quarter, scheduled preventive maintenance (PM) was performed as indicated below.

a. Week Beginning	PM Effort Completed
(1) 15 Sept 69:	Monthly check on BPE Ser 001
(2) 13 Oct 69:	Monthly and semi-annual check on BPE Ser 001
	Two-monthly check on the four 10-20-40X Enlargers
(3) 3 Nov 69:	Monthly check on BPE Ser 001
	Monthly check on BPE Ser 108 (newly installed in October)

b. Details on the above effort are included in the DISCUSSION section. Where necessary for clarification, copies of completed Preventive Maintenance Check Lists are attached.

DISCUSSION

3. September Visit. On this visit, monthly PM was performed on the BPE Ser 001 (Prototype). No discrepancies were noted.

4. October Visit:

a. On this visit, two-month PM was performed on the four 10-20-40X Enlargers, and minor adjustments were made on each to peak up enlarger performance. Enlarger Ser 101 had malfunctioning right- and lefthand

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outboard plunger assemblies resulting from worn shafts and bearings (see October 10-20-40X check list attached). The customer has placed these items on order and they will be installed when received.

b. Monthly and semi-annual PM were completed on the BPE at this time (see October BPE check list). It included photographic check-out of all matching objective and condenser lens assemblies. The following discrepancies were noted and appropriate corrections were made.

(1) There was some roughness on the lamphouse traverse rods. The rods were removed, cleaned, and smoothed for better movement.

(2) There was a fluid leak in the lamphouse. The teflon connecting link (supply line to nozzle) was replaced.

(3) There were broken flexures on the righthand non-steering roller. These were replaced from the customer's stock.

(4) Diodes on the Minarik controller (vertical transport) were burned (flashed). These diodes were replaced from customer stock.

5. November Visit. Monthly PM was performed on both BPE Ser 001 (Prototype) and BPE Ser 108 (newly installed in October 1969).

a. BPE Ser 001 again had an immersion fluid leak in the lamphouse, and the teflon link was again replaced to correct the situation (see November check list).

b. BPE Ser 108 had a white-light flare in the auto-color cycling mode; this problem is under investigation by D&E. In addition, the lamphouse gate platen had separated from its mount for an undetermined reason. The platen assembly was replaced from customer stock, and the malfunctioning parts were returned to the contractor's facility for analysis and repair. Upon completion of repairs, the assembly will be returned to the customer (see November check list).

PLANNED ACTIVITY

6. Contractor personnel will visit the customer's facility during December 1969, January 1970, and February 1970 to carry out the required preventive maintenance schedule.

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PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST

5X1 | [ ] PRECISION ENLARGER

5X1 Assigned to [ ] Date 13 Oct 69 Machine Serial N [ ] 25X1

√	Item	Description

Daily Interval

	1	Check the four indicator lamps on the sub-control panel.
√	2.1	Check closed-negative-gate interlock.
√	2.2	Check interlock that causes vertical transport slow speed.
√	2.3	Check interlock that disables negative transport after fluid injection.
√	2.4	Check operation of microswitch that functions when manual-film-movement knob is pushed in.
√	3.1	Check the indicator lamps for the two attenuator banks of the easel photometer.
√	3.2	Check the meter scale illuminator lamp of the easel photometer.
√	3.3	Check the antifatigue lamp in photo-multiplier tube housing.
√	4	Clean the glass plates of the negative gate.

One-Week Interval

√	1	Vacuum-clean the enlarger.
√	2	Check, and if necessary, clean the objective lenses and all glass filters.
√	3	Vacuum-clean the front surface of the easel.
√	4	Check the fiber optics for broken fibers.

√	Item	Description

One-Month Interval

√	1	Wax the steel rails of the lens ramp and of the easel.
√	2	Install new air filter in lamphouse.
√	3	Clean the nylon brushes of the fluid removal system.
√	4	Check all tubing and hoses for cracks and air leakage.
√	5	Check and, if necessary, clean the lenses of the condenser lens assemblies.

Six-Month Interval

√	1.1	Make a photographic check on all six matching sets of objective and condenser lens assemblies.
√	1.2	Be sure that film is tracking properly in both directions on the negative transport system.
√	2	Check the timing belts of the film transport system, of the vertical drive system, and of the easel drive assembly for wear.

Checked by [ ] Date 13 Oct 69 25X1

Changed 2/68

REMARKS:

1. Lamphouse traverse rods were smoothed and cleaned.
2. Teflon link (fluid line) in lamphouse was replaced.
3. Two broken flexures were replaced on RH slotted roller.
4. Burned diodes on Minarik controller were replaced (vertical transport).

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PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST

TWO-MONTH INTERVAL

PRECISION ENLARGER, 10-20-40X

Assigned To: [redacted] 25X1

Date: 13 Oct 69

Machine Serial [redacted] 25X1

✔	Item	Description	✔	Item	Description
	1	Film Transport		8	Vacuum Pump Assembly
✓	1.1	Static Removal Unit	NA	8.1	Hoses and Couplings
✓	1.2	Guide Roller Flanges	NA	8.2	Pump
✓	1.3	Air Knives	NA	8.3	Oil Level
✓	1.4	Belts and Pulleys		9	Lamp House Assembly
✓	1.5	Lubricate Bearings	✓	9.1	Housing
	2	Easel and Stencil Assembly	✓	9.2	Filter (Photographic)
✓	2.1	Easel	✓	9.3	Light Leaks
✓	2.2	Air Pressure System	✓	9.4	Lamp House Blower
	3	Illuminator		10	Immersion System
✓	3.1	Glass	✓	10.1	Ejectors
✓	3.2	Lamps	✓	10.2	Hoses and Couplings
✓	4	Negative Gate Interlock	✓	10.3	Blower
✓	5	Lenses	✓	10.4	Fluid Level
✓	6	Stripper Plate	✓	11	Lamp House Control
	7	Air Pressure System	✓	12	Analyzer
NA	7.1	Air Lines		13	Photo Check
NA	7.2	Compressor Control	✓	13.1	Resolution
NA	7.3	Relief Valve	✓	13.2	Uniformity
NA	7.4	Regulator	✓	14	General Inspection
NA	7.5	Filter-Compressor			
NA	7.6	Drain Storage Tank			

Initial [redacted] 25X1

REMARKS:

RH and LH outboard plunger assembly malfunctioning due to worn shafts and bearings.

Form No. MS-103
March 26, 1966

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PAR 249A

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PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST

25X1

[ ] PRECISION ENLARGER

Assigned to: [ ] 25X1

√	Item	Description

Daily Interval

√	Item	Description
√	1	Check the four indicator lamps on the sub-control panel.
√	2.1	Check closed-negative-gate interlock.
√	2.2	Check interlock that causes vertical transport slow speed.
√	2.3	Check interlock that disables negative transport after fluid injection.
√	2.4	Check operation of microswitch that functions when manual-film-movement knob is pushed in.
√	3.1	Check the indicator lamps for the two attenuator banks of the easel photometer.
√	3.2	Check the meter scale illuminator lamp of the easel photometer.
√	3.3	Check the antifatigue lamp in photo-multiplier tube housing.
√	4	Clean the glass plates of the negative gate.

One-Week Interval

	1	Vacuum-clean the enlarger.
	2	Check, and if necessary, clean the objective lenses and all glass filters.
	3	Vacuum-clean the front surface of the easel.
	4	Check the fiber optics for broken fibers.

√	Item	Description

One-Month Interval

√	Item	Description
√	1	Wax the steel rails of the lens ramp and of the easel.
√	2	Install new air filter in lamphouse.
√	3	Clean the nylon brushes of the fluid removal system.
√	4	Check all tubing and hoses for cracks and air leakage.
√	5	Check and, if necessary, clean the lenses of the condenser lens assemblies.

Six-Month Interval

	1.1	Make a photographic check on all six matching sets of objective and condenser lens assemblies.
	1.2	Be sure that film is tracking properly in both directions on the negative transport system.
	2	Check the timing belts of the film transport system, of the vertical drive system, and of the easel drive assembly for wear.

Checked by [ ] Date 3 Nov 69 25X1

Changed 2/68

REMARKS:

Because the fluid line on the lamphouse side was leaking internally, the piece of teflon tubing that connects the two stainless-steel lines was replaced.

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PAR 249A

30 Nov 69

PREVENTIVE MAINTENANCE SCHEDULE CHECK LIST

25X1

PRECISION ENLARGER

25X1

Assigned

√	Item	Description
		Daily Interval
√	1	Check the four indicator lamps on the sub-control panel.
√	2.1	Check closed-negative-gate interlock.
√	2.2	Check interlock that causes vertical transport slow speed.
√	2.3	Check interlock that disables negative transport after fluid injection.
√	2.4	Check operation of microswitch that functions when manual-film-movement knob is pushed in.
√	3.1	Check the indicator lamps for the two attenuator banks of the easel photometer.
√	3.2	Check the meter scale illuminator lamp of the easel photometer.
√	3.3	Check the antifatigue lamp in photo-multiplier tube housing.
√	4	Clean the glass plates of the negative gate.
		One-Week Interval
	1	Vacuum-clean the enlarger.
	2	Check, and if necessary, clean the objective lenses and all glass filters.
	3	Vacuum-clean the front surface of the easel.
	4	Check the fiber optics for broken fibers.

√	Item	Description
		One-Month Interval
√	1	Wax the steel rails of the lens ramp and of the easel.
√	2	Install new air filter in lamphouse.
√	3	Clean the nylon brushes of the fluid removal system.
√	4	Check all tubing and hoses for cracks and air leakage.
√	5	Check and, if necessary, clean the lenses of the condenser lens assemblies.
		Six-Month Interval
	1.1	Make a photographic check on all six matching sets of objective and condenser lens assemblies.
	1.2	Be sure that film is tracking properly in both directions on the negative transport system.
	2	Check the timing belts of the film transport system, of the vertical drive system, and of the easel drive assembly for wear.

Checked by:

Date 3 Nov 69

25X1

Changed 2/68

REMARKS:

The lamphouse gate glass that had fallen off was replaced from depot spares.
A white light flare problem was noted when operating in the auto color mode.
This is currently under investigation by D&E.

[redacted] 25X1

FY-70 Quarterly Report No. 2

PAR 251
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SUBJECT: Image Enhancement Studies Using Ring Smear Techniques

TASK/PROBLEM

1. Design, fabricate, and mount a ring smear device on the BPE breadboard enlarger, and using this equipment:

a. Develop equipment necessary to hold enlarged product and ring smear mask in registration during subsequent printing.

b. Perform image enhancement on selected mission originals.

c. Train selected contractor and customer exploitation personnel in ring smear enhancement techniques.

d. Study operating parameters of ring smear technique with the goal of improving the method.

DISCUSSION

2. Introduction. The ring smear unit to be mounted on the [redacted] 25X1 enlarger has been assembled. Work is currently proceeding with mounting and alignment of the unit. We expect this work to be complete, and photographic testing started, during the next month.

3. Progress and Current Status:

a. Several methods of preparing enhanced prints have been examined of which two show decided advantages in terms of modulation. These two methods are described separately below.

b. Method 1 (Curve 1, Figure 1) offers the greatest enhancement as measured in terms of modulation, but involves greater turn-around time, and ties up the enlarger for longer periods of time to prepare an enhanced print. The approach is based upon placing the original negative in the enlarger gate and exposing an SO-239 duplicate negative at the easel. After processing, the duplicate negative is returned to the easel and registered with the aerial image from the original negative. After

registration, a sheet of raw film (Kodalith Ortho) is placed behind the duplicate negative and a second exposure is made with the same set up. On the second exposure, however, the aerial image is smeared using a rotating tilted plate. The turn-around time with this system is on the order of 4 to 8 minutes if processing of the SO-239 duplicate negative is directly available.

c. Method 2 (Curve 2, Figure 1) involves making the unsmeared duplicate negative on SO-239 and a low-gamma smeared positive on SO-233 in two successive steps on the enlarger. At this point, the enlarger is available to proceed with the next scene. After processing, the negative and smeared positive are sandwiched in a contact printer, and then exposed for the final enhanced positive on Kodalith film. This method would be significantly faster on a production basis, but the results are inferior at higher frequencies as shown in Figure 1.

d. The modulation of a conventional enlarged image without enhancement is shown as Method 3 for the purpose of comparison.

e. Thus far, visual assessment of Methods 1 and 2 show no significant differences for the scenes tested. We plan to make samples via these two methods——customer scenes will be used as the samples forwarded for evaluation.

PLANNED ACTIVITY

4. Mount the assembled ring smear device on the [redacted] enlarger. 25X1

5. Complete alignment and checkout of test unit.

6. Prepare and conduct enhancement tests using customer scenes, and forward results for evaluation.

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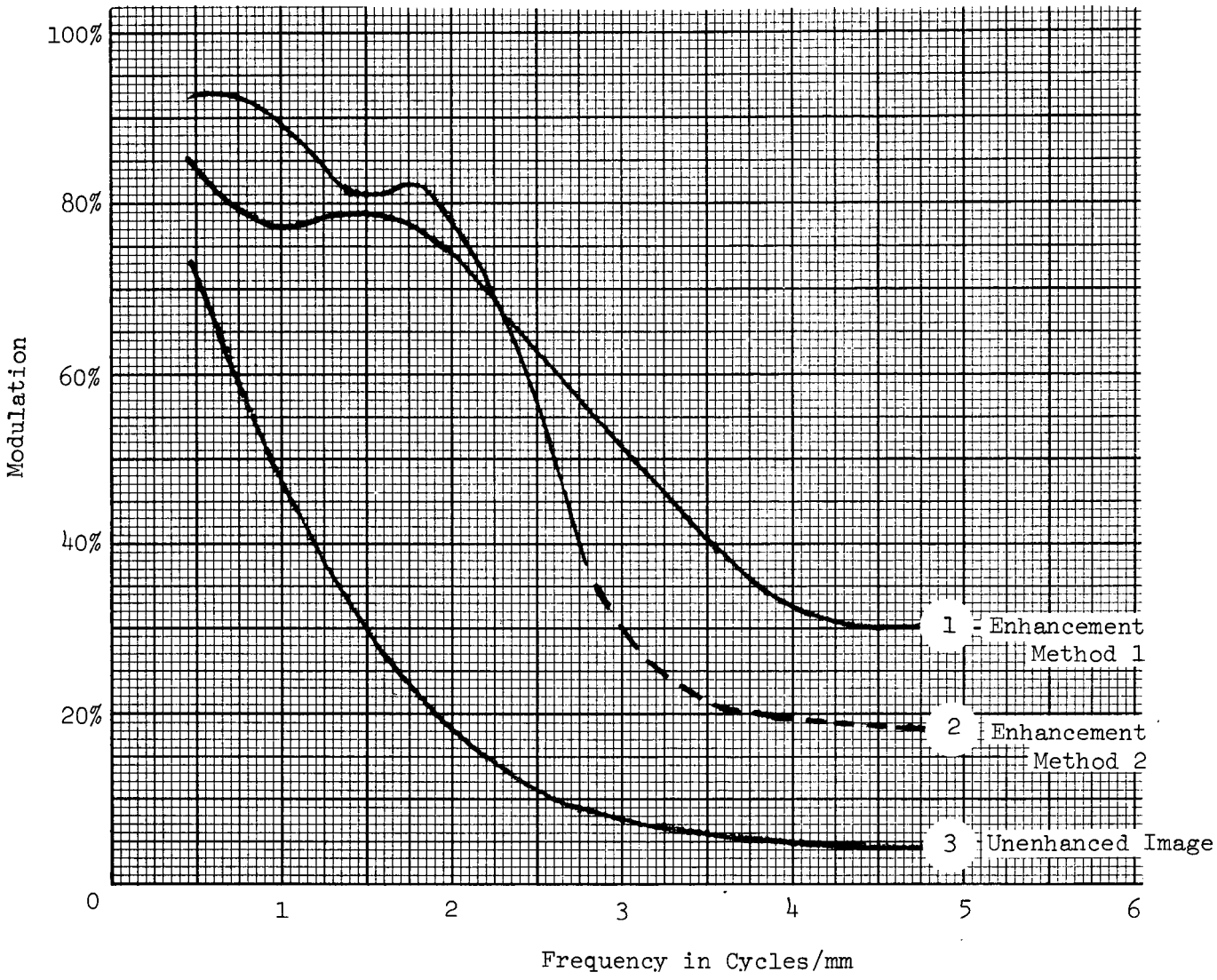
Figure 1

Modulation Transfer Function for
7° Tilt Angle — Sinewave Input



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[redacted] 25X1

FY-70 Quarterly Report No. 2

PAR 252

30 Nov 69

SUBJECT: Improvement of the Precision Enlarger Fluid Injection System

TASK/PROBLEM

1. Develop, fabricate, test, and evaluate an improved fluid-injection-system breadboard that will be compatible with the fluid-gate requirements of both the [redacted] Precision Enlarger (BPE) and 10-20-40X Precision Enlargers. 25X1

INTRODUCTION

2. Background:

a. During the past few years, Precision Enlargers used in the field have experienced certain failures in the system used to inject refractive index matching fluid into the negative gate. These failures prompted the search for an improved system. As a result, a wide variety of fluid-moving methods were considered as well as the problem of controlling the fluid volume delivered.

b. The objectives of this PAR are: (1) to obtain a system that will be highly resistant to the chemical properties of commonly used fluids of the chlorinated hydrocarbon type, and (2) to provide rapid efficient delivery of fluid to the point of application.

c. Prior to this report period, a pump design was completed and released for fabrication.

DISCUSSION

3. Progress:

a. Fabrication of the breadboard pump system was completed. The system is currently being tested and has had more than 35,000 trouble-free actuations. The test operation cycle being used permits 12,000 to 15,000 actuations weekly.

b. It is believed that resistance of the pump material to chemical attack by the refractive index fluid is probably a more important factor in determining pump life than mechanical wear. Consequently, elapsed time will probably be considered more important than number of cycle activations.

PLANNED ACTIVITY

4. Complete testing and evaluation activities.

5. Start final report preparation.

5X1

FY-70 Quarterly Report No. 2

PAR 253
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SUBJECT: Stereogram Printer Optical Development

TASK/PROBLEM

1. Study and evaluate an optical system for the reproduction of a stereo-image pair in stereogram format. Fabricate necessary kluge equipment for conducting necessary photographic tests.

DISCUSSION

2. Introduction:

a. For maximum information retrieval from stereo mission material now being acquired, special complex and expensive stereo registration equipment has been developed. Although this equipment would permit comfortable stereo fusion for observers by scale matching and image rectification, its expense restricts its availability to a limited number of users.

b. The importance of making fuller use of currently available stereo materials has recently prompted consideration of combining the registration technique above with a special optical printer system that could produce stereograms* in quantity. This approach, if successful, would make high-quality stereo views of selected targets readily available to PI's for use in low magnification, low-cost, desk-top stereoscopes. It is the intent of this PAR to prove the feasibility of an optical system necessary to the concept of a stereogram enlarging printer.

c. Prior to this report period, design goals were established which the customer felt best fulfilled his needs. These were reviewed by the contractor's optical designers who stated that they presented a substantial increase in the difficulty of achieving a successful design over the goals set forth in the original PAR statement. Beyond that, an

* Stereogram - A matched pre-aligned stereo pair readily capable of fusion by an observer using a simple stereo viewer.

increase in fabrication cost was also indicated. In response to the contractor's question whether the customer preferred resolution or field coverage in the event that both goals could not be achieved, the customer preferred that the optical designers attempt to adhere to the resolving power design goal of 200 cy/mm at the expense of increasing the minimum magnification attainable to some value greater than the goal of 2X. Optical design effort was started toward these new goals.

d. In the FY-70 Quarterly Report No. 1, paragraph 4.a erroneously stated that the customer's zoom 70 and zoom 240 stereo-microscopes could be set up to yield a minimum magnification of 3X. The correct minimum magnification for these devices is approximately 7X.

3. Progress. Optical design effort has progressed, but has not reached the point where a prediction about performance can be made. Consequently, it has not been possible to make a decision whether to proceed toward fabrication. No work has been started on the design of a suitable condenser system or on the design of a kluge printer for optical testing purposes. These efforts will be started when a workable lens system formula has been achieved.

PLANNED ACTIVITY

4. Proceed with design toward theoretical evaluation of an optical system formula for ultimate use in a Stereogram Optical Printer System.

5. When such a formula is achieved:

a. Meet with the customer for a go/no-go decision on fabrication.

b. If the decision is made to go ahead, (1) start fabrication of the formula sample lens system, (2) start design of a suitable condenser system, and (3) start design of a kluge printer to permit eventual testing of the formula sample lens system.

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5X1 [redacted]

FY-70 Quarterly Report No. 2

PAR 254
30 Nov 69

SUBJECT: Technical/Consultative Contractor Services to Improve Production Methods at Customer's Facility

TASK/PROBLEM

1. Perform studies and conduct experimental investigations for improvement of production methods and techniques at NPIC that would:

a. Permit direct coupling into an integrated National distribution plan, and

b. Increase production quality and efficiency.

2. Determine the changes in equipment, material, personnel and/or procedure that would be required to achieve the above.

3. Provide technical and/or consultative services, personnel training support, and samples of materials as available and appropriate to achieve the above.

DISCUSSION

4. Black-and-White Production at NPIC:

a. Introduction. Kodak Direct Duplicating Aerial Film (Estar Base) SO-239 was accepted by the customer for use in preparing duplicate negatives of all 1000, 1100, [redacted] series missions in the future. [redacted] was the first of these missions and a contractor representative was present at the customer's facility as the SO-239 duplicate negatives were received and used for the first time. The following is based on observations and discussions with customer personnel during that visit.

5X1
5X1

b. Effect of SO-239:

(1) Photo Lab technicians had been thoroughly briefed and trained in the proper manner to handle the SO-239 duplicate negatives, which are a mirror image of conventional third generation negatives. No problems unique to SO-239 were encountered.

(2) Photointerpreters prefer the third generation enlargements they now receive from the Photo Lab over the fourth generation ones of the past. Most of these enlargements are at magnifications of 40X or greater and the matte particles (see paragraph d below) in the SO-239 emulsion appear as very small plus density spots on the enlargements. However, these are not considered objectionable in view of the overall improvement with SO-239, and the fact that the enlargements are used mainly for briefing purposes rather than interpretation.

c. Short Range Improvements. Two minor changes in the packing configuration of the SO-239 copies were requested. First, all copies are to be wound emulsion out to simplify handling on enlargers. Second, an extra label is to be applied to each can stating that the SO-239 dupe negative is wound emulsion out, and indicating in brief phrases how the material should be handled. This request was confirmed by message on 29 September 1969 and took effect with [redacted] 25X1

d. Long Range Improvements:

(1) Matte Particles. Although the matte particles are accepted as the trade-off for improved definition in enlargements from SO-239, it would be very desirable if their effect could be eliminated. Investigations of liquid gate printing and possible manufacturing changes in SO-239 are currently underway and may ultimately offer a solution to the matte problem.

(2) Selective Target Printing. The Photo Lab actually uses only a very small percentage of the total square footage delivered to it in the duplicate negative and selective target printing would assist the lab. Current contractor reproduction techniques are aimed at providing the best overall density level in each duplicate copy on a part-by-part basis, without knowledge of what the targets of interest might be. (This necessarily requires compromises, because a series of many frames must be printed at a single level.) The Photo Lab feels that sometimes target

areas which must be enlarged could have been more desirably recorded at a different density level or contrast in the duplicate negative. It is too early to feel whether or not SO-239 will have any effect on this problem.

(3) Contrast and Density of SO-239 Copies:

(a) SO-239 film affords the capability for higher or lower system contrast than that provided in the [redacted] dupe negatives. Given a choice, the Photo Lab would prefer lower contrast. They are currently using Grade 1 paper for 90% of the work and this leaves many higher contrast grade papers, but only one lower contrast paper, from which to choose. This limits the lab's versatility for obtaining better prints of high contrast imagery. They would prefer to have Grade 2 and 3 paper be the big runner, so there would be more flexibility in both directions. Therefore, a lower contrast dupe negative would be preferred. Unfortunately, this could have a negative effect on the very low contrast imagery that is frequently acquired, especially at low solar altitudes. This is recognized as a limitation of current part-by-part printing techniques and is being considered in the overall concept of selective target printing. No immediate change in overall density or contrast of the SO-239 duplicate negatives is indicated.

25X1

(b) Another factor which must be considered is the large variation from one PI to another in what each wants in enlargements. Some prefer higher or lower densities or contrasts than others, and some are more concerned with shadow detail than others. This could probably be related to the target specialty of each PI, but it does represent a problem of the Photo Lab and a further complication for selective target printing.

(4) Photo Lab Capability to Use SO-239 Rawstock. There may be other uses for SO-239 in the Photo Lab, so exposed sensitometric control strips and a Versamat processing specification were left with lab personnel.

5. Color Production at NPIC:

a. Work has been planned and scheduled to establish an interim duplication system for use with Kodak Aerial Color Film SO-242. This work is aimed at securing the best possible duplicating quality compatible with production capabilities at NPIC.

b. As a first effort in accomplishing the above major objective of the PAR, an interim duplicating system was specified, and is being fine tuned at the contractor's facility. The interim system calls for:

(1) Reversal duplicates on Kodak Ektachrome Aerographic Duplicating Film (Estar Base) SO-360. SO-360 film is a replacement for the SO-271 duplicating film formerly used.

(2) 1X (contact) internegatives on Eastman Color Internegative Film 7271.

(3) A 10X internegative of selected areas on 7271.

(4) Prints on Eastman Color Print Film 7380 from the 10X 7271 composite internegative.

Items (2) and (3) above would be intended for use in the generation of briefing boards by the customer; item (4), for possible use as an aid to photointerpretation.

c. Interim production requirements were met [redacted] using the above approach. Also, efforts were made to establish common printing techniques and communication between customer and contractor facilities. Results are being evaluated, and further modifications to the interim approach will be made as required. 25X1

PLANNED ACTIVITY

6. Black-and-White:

a. Prepare and implement a training program to supplement the background skills of photo lab personnel.

b. Prepare to provide the customer's Photo Lab with the capability to use ultra fine grain duplicating materials. Films such as SO-369 and 6451 are the most probable examples.

7. Color:

a. Continue efforts to fine tune, and possibly modify, the printing system established at NPIC.

b. Evaluate alternative procedures and/or products that could aid production at the customer's facility.

c. Provide whatever training is needed at NPIC on new methods of production whenever such new methods are established.

d. Start investigation into possible alternative methods for generating color viewgraphs at NPIC.

APPENDIX

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APPENDIX

NUMERICAL LIST OF CONTRACT [redacted] PARs

25X1

PAR	Title	Status
201	Travel and Liaison	Active
5X1 202/224	[redacted] Precision Enlarger/* 3X - 15X Enlarger	Completed/TWX 6351 dtd 21 Jan 66
203	Rapid Access Printer	Completed 4 Aug 65
204	Contact Chip Printer	Termination Rpt completed 27 Jan 65
205	Precision 4X Enlarger	Termination Rpt completed 27 Jan 65
206	Reversal Processing Study	Completed 21 May 65
207	Contact Printer Study	Completed 6 Apr 66
208	Non-Elec. Image Enhancement	Cancelled
209	Phosphor Viewer	Cancelled
210	Laminated Slides	Completed 4 Sep 64
211	Processing Effects Study	Completed 28 Oct 65
212	Color Acq. System Review	Completed 28 Oct 65
213	Color Reprod. Review	Completed 13 Aug 65
214	Roller Transport Processor (12-Inch)	Closed/TWX 7284 dtd 23 May 66
215	Roller Transport Processor (24-Inch)	Closed/TWX 7284 dtd 23 May 66
216	Laser Photographic Exposure	Completed 12 Feb 65
217	Optimization of Lasers	Completed 9 Nov 65
218	Autofocus Systems	Not to be submitted
219	Opt. vs Contact Pg. 1:1	Not to be submitted
220	Static Elec. Hold-Down	Disapproved

* Formerly called the Briefing Print Enlarger.

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PAR	Title	Status
221	Lens Bench Manual	Not to be submitted
222	Auto Stereo Regstrn System	Completed 3 Mar 65
223	Monochr. Lens System	Disapproved
225	Micro-D Training Program	Terminated
226	Edge Trace Meas., Micro-D	Completed
227	Color Viewer	Disapproved
228	Vectograph Study	Not to be submitted
229	Optical Design Film Viewer	Not to be submitted
230	10X Color Lens	Disapproved
231	10-20-40X Color Lamphouse	Disapproved
232	Automated Edge Trace Device	Disapproved
233	Zoom (6X to 60X) Projection Lens	Terminated/TWX 7878 dtd 26 Jul 66
234	MTF Exposure Device	Disapproved
235	Automation Program Study	Disapproved
236	Film Disposal Rewind Unit	Disapproved
237	Briefing Aids	Completed 25 Jul 65
238	Equipment Installation	Closed/TWX 7284 dtd 23 May 66
239	Administration	Closed
240	Not Assigned	-
241	Not Assigned	-
242A	Color Demonstration Material	Completed 29 Mar 66
243A	[redacted] Precision Enlarger*	Completed 22 Sep 67
244	Spare Parts for RT Processors	Completed 21 Nov 67
245	BPE High Magnification Lens Sets	Completed 26 Mar 68
246	RT-12 and RT-24 Operational Improvements	Completed 25 Feb 68

5X1

* Formerly called the Briefing Print Enlarger.

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PAR	Title	Status
247	Base Spare Parts Kit	Completed 25 Nov 68
248	BPE High-Magnification Lens Set	Completed 15 Nov 68
249	[redacted] Precision Enlarger Prototype (BPE) Operational Improvements and Maintenance	Completed 30 June 69
249A	Photographic Enlarger Maintenance	Active
250	[redacted] Precision Enlarger Mod II (Prototype)	Disapproved
251	Image Enhancement Studies Using Ring Smear Techniques	Active
252	Improvement of Precision Enlarger Fluid Injection System	Active
253	Stereogram Printer Optical Development	Active
254	Technical/Consultative Contractor Services to Improve Production Methods at Customer's Facility	Active

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